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DECLARATION UNDER 37 C.F.R. §1.132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Meagher et al.

Application No. 10/079,130

Filing Date: February 20, 2002

**For: RAPID PRODUCTION OF
MONOCLONAL ANTIBODIES**

Art Unit: 1644

Examiner: Ouspenski, Ilia

Confirmation No. 6995

DECLARATION UNDER 37 C.F.R. § 1.132 OF CHRISTINE MILCAREK

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

NEEDLE & ROSENBERG, P.C.
Customer Number 23859

Sir:

I, Christine Milcarek, declare as follows:

1. I am a Professor in the Department of Immunology at the University of Pittsburgh, School of Medicine, Pittsburgh, PA. My Curriculum Vita is attached hereto.
2. I am a research professor with many years of experience in immunology. I am the senior author on Milcarek et al. ("Changes in Abundance of IgG 2a mRNA in the Nucleus and Cytoplasm of a Murine B-Lymphoma Before and After Fusion to a Myeloma Cell" *Mol. Immunol.* 33: 691-701 (1996). Therefore, I am very familiar with the methods and results described in this reference.
3. The Milcarek et al. reference shows that after fusion of myeloma cells with a memory B cell line to produce AXJ hybrid cells, production of the secretory-specific form of Ig heavy chain mRNA predominated over that of the membrane encoding form by 100:1 in the AXJ hybrid

cells. This 100 fold increase in the ratio of secretory versus membrane forms of the immunoglobulin heavy chain in the hybrids was attributed to a 10 fold decrease in the production of the membrane form of the immunoglobulin by post-transcriptional RNA processing events whereas the overall amounts of nuclear RNA remain relatively constant between the hybrid cells and the B cells (see page 698, col. 2, last paragraph). Also contributing to the myeloma-like phenotype, i.e. secretory phenotype, of the hybrid cells is a decrease in the nuclear to cytoplasmic ratio for the secretory form of the $\gamma 2a$ immunoglobulin in the hybrid cells compared with the parent lymphoid cell line, with a smaller apparent change in the nuclear to cytoplasmic ratio for the $\gamma 2a$ membrane encoding form (see page 699, col. 2). This reference also points out that the numbers obtained for the membrane encoding form are very small and therefore difficult to quantify accurately, as evidenced by Figure 4 which shows that the membrane form of the immunoglobulin is barely detectable in AXJ hybrid cells.

4. I further declare that based on these results, at the time of the present invention, it was evident that the membrane form of the immunoglobulin is produced in small quantities in a lymphoid cell (e.g. a B cell) and that once fusion occurs with a myeloma cell, the amount of the membrane form of the immunoglobulin is further reduced. Therefore, myself and others in the field believed that the endogenous membrane form of the antibody was not expressed to any appreciable extent in a hybridoma cell. Since, at the time of the present invention, the endogenous membrane form of the antibody was not expressed to any appreciable extent, it could not be reasonably expected that one of skill in the art could present the endogenous membrane form of the antibody on the hybridoma cell surface via any means at consistently detectable levels.
5. I am familiar with the work performed in Dr. Richard Meagher's laboratory on the production of hybridomas that reliably express the endogenous membrane form of a monoclonal antibody on their cell surface. This work is considered by myself and other colleagues in the field of immunology as a breakthrough in monoclonal antibody technology, since this is the first demonstration that the membrane form of a monoclonal antibody normally produced by a

hybridoma cell (i.e., the endogenous membrane form of the monoclonal antibody with the specificity acquired from the B cell utilized to make the hybridoma cell) can be consistently presented on the membranes of hybridoma cells thus overcoming the difficulties and time constraints associated with traditional monoclonal antibody production technologies.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that any such willful false statement may jeopardize the validity of the application or any patent issued thereon.

Christine Milcarek
Christine Milcarek

May 11, 2006
Date

CURRICULUM VITAE

Revised: May 2006

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EDUCATION AND TRAINING

Dates	Degree Received and Year	Name & Location of Institution	Major Subject/ Advisor
1964-1968	B. S. 1968	Duquesne U. Pittsburgh, PA	Chemistry
1968-1972	Ph. D. 1972	Johns Hopkins U. Baltimore, MD	Microbiology Dr. Bernard Weiss
1972-1975	Postdoctoral	Massachusetts Inst. Technology Cambridge, MA	RNA Synthesis Dr. Sheldon Penman

ACADEMIC APPOINTMENTS AND POSITIONS

Years inclusive	Name/Location of Institution	Dr. Milcarek's Title
1976-1983	College of Physicians and Surgeons of Columbia University, New York, N.Y.	Assistant Professor of Microbiology
1983-1984	University of Pittsburgh, School of Medicine, Pittsburgh, PA	Visiting Associate Professor of Microbiology
1984-1995	University of Pittsburgh, School of Medicine, Pittsburgh, PA	Associate Professor of Molecular Genetics and Biochemistry
1989-1991	University of Pittsburgh, School of Medicine, Pittsburgh, PA	Director of the Biomedical Graduate Program
1991-1994	University of Pittsburgh, School of Medicine, Pittsburgh, PA	Assistant Dean for Graduate Studies
1995-2002	University of Pittsburgh, School of Medicine, Pittsburgh, PA	Professor of Molecular Genetics and Biochemistry & member of Graduate Program in Immunology
2002-present	University of Pittsburgh, School of Medicine, Pittsburgh, PA	Professor of Immunology & member graduate program in Molecular Genetics and Biochemistry

MEMBERSHIPS IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

Year	Organization
1975-present	American Women in Science
1984-present	American Association of Immunologists
1995--present	RNA Society

SCIENTIFIC HONORS

1981-1986	Research Career Development Award, National Institutes of Health Title: Immunoglobulin Gene Expression in Myeloma Variants
1992-1995	Program Director of Graduate Assistance in Areas of National Need, a fellowship program from the Department of Education to the Molecular Genetics and Biochemistry Department
1995-present	Scientific Coordinator for "Young Women in Science Day"; a program for 100 seventh grade girls to experience scientific experiments
1996, 1997	Host lab for American Association of Immunology high school teachers' summer program, Mr. GF DiCioccio; Mr. Kevin Kelley.
1998	Organizer for workshop on polyadenylation, at RNA Society Meeting, Madison Wisconsin
1998	Co-organizer, Rust Belt RNA Meetings for scientists in the Ohio, Indiana, and PA region
1999	Organizer, Rust Belt RNA Meetings for scientists in the Ohio, Indiana, and PA region. National Science Foundation Meeting Award obtained.
1999	Distinguished Mentor Award from the Survival Skills and Ethics Program, University of Pittsburgh
2000	Named "Woman of Distinction in Math and Science" by the Girl Scouts of Southwestern Pennsylvania

PUBLICATIONS:

A. Peer Reviewed Articles:

1. Milcarek, C. and B. Weiss (1972). Mutants of Escherichia coli with altered deoxyribonucleases. I. Isolation and characterization of mutants for exonuclease III. Journal of Bacteriology **68**, 303-318.
2. Milcarek, C. and B. Weiss (1973). Preliminary mapping of mutations affecting exonuclease III in E. coli K12. Journal of Bacteriology **113**, 1086-1088.
3. Weiss, B. and C. Milcarek (1974). Mass Screening for Mutants with Altered DNAses by Microassay Techniques. In Methods in Enzymology, Ed., L.Gross and K.Moldave, **29**: 180-193.
4. Milcarek, C., R. Price and S. Penman (1974). The metabolism of a poly(A) minus mRNA fraction in HeLa cells. Cell **3**, 1-10.
5. Milcarek, C. and S. Penman (1974). Membrane-bound polyribosomes in HeLa cells: association of poly(A) with membranes. Journal of Molecular Biology **89**, 327-338.
6. Kaufmann, Y., C. Milcarek, H. Berissi and S. Penman (1977). HeLa cell poly(A) mRNA codes for a subset of poly(A⁺) mRNA directed proteins, with an actin as a major product. Proc. Natl. Acad. Sci. USA **74**, 4801-4805.
7. Milcarek, C. and K. Zahn (1978). The synthesis of ninety proteins including an actin throughout the HeLa cell cycle. Journal of Cell Biology **79**, 830-836.

8. Henderson, A. S., M. T. Yu and C. Milcarek (1979). On the chromosomal location of 5.8S DNA in people and mice. *Cytogenetics and Cell Genet.* 23, 201-207.
9. Milcarek, C. (1979). HeLa cell cytoplasmic mRNA contains three classes of sequences: predominantly poly(A)⁺, predominantly (A⁺) and bimorphic. *Eur. Journal of Biochemistry* 102, 467-476.
10. Brandt, C. and C. Milcarek (1980). Heat shock induced alterations of poly(A) metabolism in *Drosophila melanogaster* cells. *Biochemistry* 19, 6152-6158.
11. Monk, R. J., S. L. Morrison and C. Milcarek (1981). Heavy chain mutants derived from γ mouse myeloma: Characterization of heavy chain mRNA, proteins and secretion in deletion mutants and mRNA in Ig γ 2a mutant progeny. *Biochemistry* 20, 2330-2339.
12. Breiner, A. V., C. Brandt, C. Milcarek, R. W. Sweet, E. Ziv, Y. Burstein and I. Schechter (1982). Somatic DNA rearrangement generates functional rat immunoglobulin Kappa genes: the J_k cluster is longer in rat than in mouse. *Gene* 18, 165-174.
13. Burstein, Y., A. V. Breiner, C. R. Brandt, C. Milcarek, R. W. Sweet, D. Warszawski, E. Ziv and I. Schechter (1982). Recent duplication and germline diversification of rat immunoglobulin kappa chain in gene joining segments. *Proc. Nat. Acad. Sci. USA* 79, 5993-5997.
14. Brandt, C. R., S. L. Morrison, B. K. Birshtein and C. Milcarek (1984). Loss of a consensus splice signal in a mutant immunoglobulin gene eliminates the CH₁ domain exon from the mRNA. *Molecular and Cellular Biology* 4, 1270-1277.
15. Milcarek, C. and B. Hall (1985). Cell specific expression of secreted versus membrane forms of immunoglobulin gamma 2b mRNA involves selective use of alternate polyadenylation sites. *Molecular and Cellular Biology* 5, 2514-2520.
16. Gregor, P. D., B. J. Kobrin, C. Milcarek and S. L. Morrison (1986). Sequences 3' of immunoglobulin heavy chain genes influence their expression. *Immunol Rev* 89, 31-48.
17. Kobrin, B., C. Milcarek and S. L. Morrison (1986). Sequences near the 3' secretion-specific polyadenylation site influence levels of secretion-specific and membrane-specific IgG2b mRNA in myeloma cells. *Molecular and Cellular Biology* 6, 1687-1697.
18. Kobrin, B., K. Glass, S. L. Morrison and C. Milcarek (1988). An immunoglobulin heavy chain gene deletion at direct repeats: Nucleotide sequence and effect on mRNA accumulation. *Molecular Immunology* 25, 181-187.
19. Hall, B. L. and C. Milcarek (1989). Sequence and polyadenylation site determination of the murine immunoglobulin g2a membrane 3' untranslated region. *Molecular Immunology* 26, 819-826.
20. Flaspohler, J. A. and C. Milcarek (1990). Myelomas and lymphomas expressing the immunoglobulin gamma 2a heavy chain gene have similar transcription termination regions. *Journal of Immunology* 144, 2802-2810.
21. Genovese, C. A. and C. Milcarek (1990). Increased half-life of mu immunoglobulin mRNA during mouse B cell development increases abundance. *Molecular Immunology* 27, 733-743.

22. Genovese, C., S. Harrold, and C. Milcarek (1991). Differential mRNA stabilities affect mRNA levels in mutant mouse myeloma cells. *Somatic Cell and Molecular Genetics* 17, 69-81.
23. Harrold, S., C. Genovese, B. Kobrin, S.L. Morrison and C. Milcarek. (1991). A comparison of apparent mRNA half-life using kinetic labelling techniques vs. decay following administration of transcriptional inhibitors. *Analytical Biochemistry* 198, 19-29.
24. Flaspohler, J. and C. Milcarek (1992). Use of *in vitro* transcribed RNAs as immobilized targets during RNA:RNA hybridizations. *Biotechniques* 13, 68-72.
25. Lassman, C.R., S. Matis, B.L. Hall, D.L. Toppmeyer and C. Milcarek (1992). Plasma cell-regulated polyadenylation at the Ig gamma 2b secretion-specific poly(A) site. *Journal of Immunology* 148, 1251-1260.
26. Lassman, C.R. and C. Milcarek (1992). Regulated expression of the mouse g2b immunoglobulin heavy chain gene is influenced by polyA site order and strength. *Journal of Immunology* 148, 2578-2585.
27. Flaspohler, J.A., D. Boczkowski, B.L. Hall, and C. Milcarek. (1995). The 3' untranslated region of membrane exon 2 from the gamma 2a immunoglobulin gene contributes to efficient transcription termination. *Journal of Biological Chemistry* 270, 11903-11911.
28. Edwalds-Gilbert, G. and C. Milcarek (1995). Regulation of poly(A) site use during mouse B cell development involves a change in the binding of a general polyadenylation factor in a B cell stage-specific manner. *Molecular and Cellular Biology* 15: 6420-6429.
29. Edwalds-Gilbert, G. and C. Milcarek. (1995). The binding of a subunit of the general polyadenylation factor, Cleavage-Polyadenylation Specificity Factor (CPSF) to polyA sites changes during B cell development. *Nucleic Acids Symposium Series* 33: 229-233.
30. Milcarek, C., M. Suda-Hartman, and S. C. Croll. (1996). Changes in abundance of IgG 2a mRNA in the nucleus and cytoplasm of a murine B-lymphoma before and after fusion to a myeloma cell. *Molecular Immunology* 33: 691-701.
31. Matis, S., K. Martincic and C. Milcarek. (1996) B-lineage regulated polyadenylation occurs on weak poly(A) sites regardless of sequence composition at the cleavage and downstream regions. *Nucleic Acids Research* 24: 4684-4692.
32. Edwalds-Gilbert, G., K. L. Veraldi, and C. Milcarek. (1997) Alternative poly(A) site selection in complex transcription units; a means to an end? *Nucleic Acids Research* 25: 2547-2561.
33. Hastings, M. L., C. Milcarek, K Martincic, M. L. Peterson, and S. H. Munroe. (1997) Expression of the thyroid hormone receptor gene, *erbAalpha*, in B lymphocytes: alternative mRNA processing is independent of differentiation but correlates with anti-sense RNA levels. *Nucleic Acids Research* 25: 4296-4300.
34. Martincic, K., R. Campbell, G. Edwalds-Gilbert, L. Souan, M.T. Lotze and C. Milcarek. (1998) Increase in the 64 kDa subunit of the polyadenylation/ cleavage factor (CstF-64) during the Go to S-phase transition. *Proc. Natl. Acad. Sci., USA* 95: 11095-11100.
35. Terhune, S., C. Milcarek, L.A. Laimins. (1999) Regulation of human papillomavirus type 31 polyadenylation during the differentiation-dependent life cycle. *J. Virol.* 73: 7185-7192.

36. Veraldi, K.L., G. Edwalds-Gilbert, G., A.M. Wallace, C.C. MacDonald, C.C., and C. Milcarek. (2000) Isolation and characterization of polyadenylation complexes assembled *in vitro*. RNA 6: 768-777.
37. Veraldi, K.L., K. Martincic, G. Arhin, L. H. Chung-Ganster, J. Wilusz. and C. Milcarek. (2001). hnRNP F influences binding of a 64-kilodalton subunit of Cleavage stimulation factor to mRNA precursors in mouse B-cells. Molecular and Cellular Biology 21: 1228-1238.
38. G. K. Arhin, M. Boots, P. S. Bagga, C. Milcarek and J. Wilusz (2002) Downstream Sequence Elements with Different Affinities for the hnRNP H/H' Protein Influence the Processing Efficiency of Mammalian Polyadenylation Signals. Nucleic Acids Research 30: 1842-1850.
39. C. Milcarek, K. Martincic, L-H Chung-Ganster, and C.S. Lutz (2003) The snRNP-associated U1A levels change following IL-6 stimulation of human B-cells. Molecular Immunology 39: 809-814.
40. Shell, S., C. Hesse, S. Morris, and C. Milcarek (2005) Elevated levels of the 64-kDa cleavage stimulatory factor (CstF-64) in LPS-stimulated macrophages influence gene expression and induce alternative poly(A) site selection. J Biol Chem. Dec 2;280(48):39950-61. Epub 2005 Oct 5.
41. S.A. Alkan, K. Martincic, and C. Milcarek (2006) The hnRNPs F and H2 bind to similar sequences to influence gene expression. Biochem. J. 393: 361-371.

B. Non-refereed Publications (selected)

- C. Brandt and C. Milcarek (1984) CH1 domain mutation in murine immunoglobulin gamma 2b near consensus splice sites. Gen Bank Accession #B10035.
- B. Hall and C. Milcarek (1989). Murine immunoglobulin gamma 2a membrane 3' untranslated region. GenBank Accession #M35032.
- S. Matis and C. Milcarek (1992). Nucleotide sequence within the mouse immunoglobulin gamma 2b heavy chain CH3.M1 intron. Gen Bank Accession #Z12300.
- Didomenico, C., G.F. DiCiocco, O.J. Finn, C. Milcarek. (1998) Introducing immunology into high school chemistry and biology classes. FASEB J. 12: 1816 (abstract).
- P. Grabowski, C. Peebles, and C. Milcarek (2005) Mary P. Edmonds (1922-2005). RNA. 2005 Sep;11(9):1331-2.

PROFESSIONAL ACTIVITIES

TEACHING:

- A. At Columbia University, School of Medicine:**
1. Course director for interdisciplinary Cell Biology course for first year graduate students "Prokaryotic and Eukaryotic Regulation" 1980-1983. Lecturer in same.
 2. "Advanced Topics in Genetics" Seminar and lecture course for second and third-year graduate students; taught 1976, 1978, 1980.
 3. "Microbiology" for first year medical students. Lecturer on bacterial genetics 1977-1978. Laboratory Instructor bacterial genetics and pathogenic organisms; 1976-1983.
 4. "Advanced Prokaryotic/Eukaryotic Gene Regulation". Seminar and lecture course for second and third year graduate students, 1982.

B. At the University of Pittsburgh, School of Medicine

1. Graduate Student Courses:

- a. Fall 1983 Lecture (2 hours) "Immunological Methods and Antigen-Antibody Interactions" in MS MIC 219 - "Immunology"
- b. Spring 1984 Lecture (2 hours) "Immunoglobulin Genes and DNA Rearrangements in MS MIC 250 - "Molecular and Cellular Genetics"
- c. Fall 1984 Lectures (6 hours) MS MIC 315 - "Molecular Biology of the Gene" Titles: Restriction Modification in Bacteria; Recombination in Bacteria; Antibody Gene Rearrangement; Oncogenes
- d. Spring 1985-1991 Lectures (26 hours) and Course Director MS MIC 219 "Immunology" topics included: immunologically active cells and tissues, B and T cell functions, hypersensitivity, autoimmunity, tumor immunology and major histocompatibility genes.
- e. Fall 1985-1989 Lectures (4 hours) MS MIC 315 "Molecular Biology of the Gene" Titles: Antibody Gene Rearrangements, Oncogenes
- f. Spring 1986 Discussion sections (28 hours) and Course Director MS MIC 313 "Advanced Topics in Immunology".
- g. Fall 1992-1997 Course Director and lecturer in "Comprehensive Immunology" MS MIC 2360 - (8 hrs lecture and 10.5 hrs paper discussions)
- h. Fall 1991-1996 Course Director and lecturer in: "Scientific Ethics" MS MIC 2290 (4 hrs lecture and 10.5 paper and problem discussions)
- i. Fall 1997- 2001 Small group preceptor in INTBP Foundations Course 6 weeks, 4 hours per week, discussion of original papers from the literature
- j. Fall 1996- present Lecturer in Eucaryotic Molecular Genetics Course MS BMG 2520, and Advanced Molecular Genetics MS BMG 3510, 2 hours in each course.
- k. Spring 2000-to present Course Director and lecturer in: "Scientific Ethics" MS INT 2290 (4 hrs lecture and 10.5 paper and problem discussions)
- l. Fall 2001 Course Director and lecturer in "Advanced Topics in Immunology/ Macromolecules" MS IMM 3220 & MS BMG 3520; 15 hours of lecture and small group discussion on research papers which I chose for the students.
- m. Spring 1998-to present Lecturer in "Comprehensive Immunology" MS IMM 2210, 4 hours of lecture on topics including Antigen:Antibody interactions, B-cell development and Fc Receptors.
- n. Spring 2002- to present Lecturer in "Experimental Immunology" MS IMM 2230, 1 hour of lecture on Mechanisms of Ig gene rearrangement.

2. Medical Student Courses to 1st year students

- a. Winter 1984 Lectures (5 hours) in "Introduction to Infectious Disease"; Titles: Antibody Structure Antibody Binding Sites and Immunogenic Determinants Antigen: Antibody Reactions The Complement System T and B Cell Specific Gene Rearrangements
- b. Winter 1985-1992 Lectures (14 hours) and Section Coordinator in "Introduction to Infectious Disease"; Immunology Section
- c. Winter 1984; 1985; 1986 Laboratory Instructor (20 hours/year) in "Introduction to Infectious Disease"; Identification of Pathogenic Micro-organisms
- d. Fall 1986-1992 One lecture in "Histology" Course on T and B Cells
- e. Winter 1993-2000 Small group conference leader (17 hours) and lecture (2 hours) in "Immunology and Inflammation"
- f. Winter 2000-2002 small group conference (PBL) leader (13.5 hours) in "Infectious Diseases"
- g. November 2000-2002 small group conference (PBL) leader (4 hours) in "Human Genetics"
- h. January 2002, 2003 Lecturer in Immunology and Inflammation for Medical Students, 3 hours of lecture on Antibodies and B-cells
- i. January 2003 Small group facilitator in Immunology and Inflammation for Medical Students, 9 sessions of 1 hour each

3. Physician Investigator Training Program Faculty - 1987 to 1989

Two-week laboratory training session each year in Molecular Biology for the Department of Medicine's M.D. program participants.

<u>Ph.D. STUDENTS TRAINED</u>		
Name	Training Period	Current Position
Raymond J. Monk	1977-1979	Staff member Trudeau Institute
Curtis Brandt	1978-1983	Associate Professor, University of Wisconsin, Department of Ophthalmology, Madison, WI
Barry Kobrin	1981-1985	Research Member, Organon Teknika Corp., Rockville, MD
Brenda Hall	1984-1989	Research Member, Organon Teknika Corp., Rockville, MD
Charles Lassman	1985-1989	Assistant Professor of Pathology, UCLA Medical Center, Los Angeles, CA
Christine Genovese	1982-1989	Assistant Professor, Bowling Green State University
John Flaspohler	1985-1991	Asst Prof. Concordia College
Sherri Matis	1984-1993	Director of Bioinformatics Zeneca Pharmaceuticals, Wilmington Delaware,
Kristen Veraldi	1995-1999	Intern at the University of Michigan School of Medicine
Sekan Alkan	2000-present	In training
Scott Shell	2000-present	In training

<u>M.S. STUDENTS TRAINED</u>		
Name	Training Period	Present Position
Susan Croll	1990-1992	Senior Production Specialist, Biological Detection Systems, Pittsburgh, PA
David Boczkowski	1990-1993	Research Associate, Duke Univ
Lina Souan	1993-1996	PhD at Weizman Inst. Immunol Dept. 2001

<u>FELLOWS TRAINED</u>		
Name	Training Period	Present Position
Deborah Toppmeyer, M.D.	1989-1990	Faculty, UMDNJ Medical School, Newark, New Jersey
Geetha Anand, Ph.D.	1992-1993	Postdoctoral Fellow, Dept. of Pharmacology, Stanford, CA
Janet Amico, M.D.	1989	Professor of Endocrinology, University of Pittsburgh, School of Medicine
Gretchen Edwalds-Gilbert, Ph.D.	1993-1997	Assistant Professor, North Central University, Chicago, IL

RESEARCH SUPPORT

1. Previous Grants

Number/ Dr. Milcarek's role in project	Years Inclusive	Title	Source, T.D.C./yr
1R01GM22893 P.I.	1976-79	Regulation and Adenylation of Cytoplasmic mRNA	National Inst. of Health \$90,000
NP331 P.I.	1980-81	Ig Gene Expression in Myeloma Variants	Am. Cancer Soc. \$75,000
1R01CA31683 P.I.	1982-83	Ig Gene Expression in Myeloma Variants	N.I.H. \$65,000
1R01CA36606 P.I.	1983-93	Ig Gene Expression in Myeloma Variants	N.I.H. \$120,000
1K04CA00758 P.I.	1981-83	Research Career Development Award: Ig Gene Expression	N.I.H. \$40,000
5K04CA00915 P.I.	1983-86	Research Career Development Award: Ig Gene Expression	N.I.H. \$40,000
R.S. Caliguiri Award P.I.	1990-92	Amyloidosis Research Fellowship	Pgh. Foundation \$14,000
P200A20421-92 Program Director	1992-95	Graduate Assistance in Areas of National Need Dept. Education	\$120,000/yr
RO1 GM50145-16 Principal Investigator	1983-1999	Immunoglobulin Gene Expression in Myeloma and Lymphoma	N.I.H. (GMS) \$157,000/yr
P60-AR44811 P.I. of D&F	1997-2000	Multipurpose Arthritis Center P.I. Tim Wright	N.I.H. \$61,000/yr

2. Active Grant Support

1R01CA86433-01 P. I.	2000-2008	Polyadenylation factors in B-cells, lymphoma & Myeloma	NCI \$175,000/yr
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SERVICE

A. At Columbia University

Affirmative Action Committee - 1978-1980

Ad Hoc Committee on Cell Biology - 1979-1980

Human Investigations for Department of Microbiology 1977-1983

Ad Hoc Committee on Ethics - 1981-1983

Faculty Council - 1981-1983

B. At the University of Pittsburgh

1. Graduate Program in Microbiology Chairperson - 1986
2. Graduate Program in MB² Director - 1987-1989
3. Interim Director of the Graduate Program in the School of Medicine - 1987
4. Director of Graduate Program in the School of Medicine 1989-1991
5. Assistant Dean for Biomedical Graduate Studies - 1991-1994
6. University Graduate Council 1989-1994
7. Medical Student Promotions Committee - 1985-1990
8. Coordinating Committee on Research Integrity - 1992-to 1996
9. Task Force on Genetics and Immunology - 1984
10. Curriculum Committee - 1986-1987
11. Dickson-Mellon Prize Committee - 1986-1987
12. Anatomy Department Junior Faculty Search Committee - 1986
13. Cancer Institute faculty search interviewer - 1986 - 1987
14. Search Committee for MB² New Faculty - 1989-1990
15. Graduate Student Preliminary Examinations Committees in:
 - a. Molecular Biology; b. Genetics; c. Immunology
16. Graduate Student Comprehensive Examinations Committees for:
 - a. Ms Jane Pfeilsticker
 - b. Ms Monalisa Mojumdar
 - c. Ms Jeanne Jordan
 - d. Mr. Malcolm Johns
 - e. Mr. Paul Rowland
 - f. Mr. Robert Scott
 - g. Mr. Jeffrey Bartlett
 - h. Mr. Philip Hanna
 - i. Mr. Keren Hulkower
 - j. Mr. Thomas Blochberger
 - k. Ms. Patricia Compagnone-Post
 - l. Mr. Jianzhou Wang
 - m. Mr. James Synder
 - n. Mr. Robert Berman
 - o. Ms. Teresa Koslowski
 - o. Ms. Essie Lamousse-Smith
 - p. Mr. Peter Scacheri
 - q. Mr. Matt Wilson
17. Graduate Thesis Advisory Committees for:
 - a. Ms Andrea Cortese - Hassett Student of Dr. Gill, Department of Pathology
 - b. Ms Jennifer Tong - Student of Dr. Curthoys, Department of Microbiology, Biochemistry & Molecular Biology (MGB)
 - c. Ms Jane Pfeilsticker - Student of Dr. Hoffee, MGB
 - d. Ms Monalisa Mojumdar - Student of Dr. Khan, MGB
 - e. Mr. Greg Buzzard - Student of Dr. J. Locker, through Department of Anatomy
 - f. Ms Jung-Joo Hwang - Student of Dr. N. Curthoys, MGB
 - g. Mr. Chen Wei-Lin - Masters Degree Student of Dr. C. Evans, MGB
 - h. Ms. Anne Stewart - Student of Dr. David Tweardy, MGB
 - i. Mr. Ken Wasserman - Student of Dr. Goldfarb, MGB
 - j. Mr. Jianzhou Wang - Student of Dr. Eric Hoffman, MGB
 - k. Mr. Jianhua Zhou - Student of Dr. Eric Hoffman, MGB
 - l. Ms. Sharon Harrold- Student of Dr. Montelaro, MGB

- m. Ms. Julie Blander- Student of Dr. O.J.Finn, MGB
- n. Mr. James Snyder Student of Dr. O.J.Finn, MGB

- 18. Chair of Milestones Committee for MGB Program; Organizer of Comprehensive Exam Committees 1997-present.
- 19. Graduate School Admissions Committee, Immunology Program representative, 1998-2002. Admissions Committee Chair 2000- 2002.

External Peer Review Duties

- 1. American Cancer Society Study Section on Nucleic Acids and Protein Synthesis panel. Ad hoc member - February 1985; Permanent Member 1987-1991
- 2. National Institutes of Health Study Section on "Allergy and Immunology" Ad hoc member - February, 1987; December, 1988, June 2002, August 2002
- 3. Allegheny Singer Research Foundation proposal -Ad hoc reviewer 1991, 1992.
- 4. Panel member for Grant Reviews for Texas Board of Higher Education, Austin, TX; September, 1991.
- 5. National Institutes of Health Training Grant/Fellowships Special Study Section, 1992, 1993, 1994, 1996
- 6. National Institutes of Health Study Section - "Molecular Biology" Ad hoc member -October 1993, ad hoc member 1996, 1997, Special Reviewer May 1994
- 7. National Institutes of Health Study Section "Biochemistry" ad hoc member, June 1995. Sept 1997
- 8. NIH Allergy and Immunology study section, permanent member June 2003-June 2007.

Ad hoc reviewer of manuscripts for:

Molecular and Cellular Biology, Journal of Molecular Biology, Journal of Cell Biology, Journal of Cellular Physiology, Journal of Immunology/Molecular Immunology Section, Journal of Molecular Immunology, Nucleic Acids Research, International Immunology, Proceedings of the National Academy, AACR journal Cancer Research, Human Molecular Genetics

Recent External Lectures/Meeting Talks last 5 years

Oxford University, RNA 3' End Processing Meeting, September 2001
 American Association of Immunology, Seattle Washington May 2000
 Rust Belt RNA Meeting Deer Creek, Ohio November 5, 1999
 Rust Belt RNA Meeting Salt Fork, Ohio October 1, 1998
 RNA Society Meeting, Madison WI, May 1998 Session chair
 Northwestern University, Department of Microbiology, February 1998
 Cold Spring Harbor, Eucaryotic RNA Processing Meeting, Platform Talk, August 1997

Community Service

- Organizer for "School of Medicine Young Women in Science Day" from 1994- April 2004. Two hundred 7th grade girls and their teachers were brought to campus and shown what a woman scientist does and some experiments on disease diagnosis and identification of unknown proteins and organisms.
- Girl Scouts: Troop Leader from 1997-2002. Girls in Junior Troop #1333 numbered: 18, 20, and 22. Girls in Cadette Troop numbered: 13, and 10. Member of Advisory Panel on Biotechnology 2002-present. Member of selection committee for Girls and Women of Distinction Awards, 2001-present, Chaired committee 2004. Ran

"Space Exploration" 7 hour workshop for 25 Cadette age girls with Alpha-Phi-Omega Badge day November 16, 2003 at CMU. Ran "Creative Cooking" workshop Nov 2003

- Career panel participant in "Expanding your Horizons in Science and Mathematics" in 1999 to 2002. 329 girls attended in 2001.
- Member First Unitarian Church of Pittsburgh, since 1994; Member Religious Education Committee 1996-2000. Mentor for Coming of Age child, Ms. Anna Hereth, 2002-2003. On the Board of Trustees 2003-2006.
- Taught course on "Ethical Dilemmas Arising from Advances in Biotechnology" at Summer Institute of the Ohio-Meadville District Unitarian Universalist's Association to 25 people of various ages and backgrounds. 2002 and 2003. Taught 4 adult RE classes in February 2003.

Other Recognitions

- Rated by University of Pittsburgh Office of Student Affairs as having a "significant and positive impact" on students in 1999
- Recognized by "Pittsburgh Tribune Review" Monday April 5, 1999 in article about Young Women in Science Day
- Subject of article in "Pitt Med Magazine" Fall 1999 about Young Women in Science Day
- Interviewed for "In Pittsburgh" on October 13, 1999 for work with Girl Scouts and troop web site.